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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,585	03/14/2005	Friedrich Boecking	R.303413	7599

2119 7590 02/26/2007
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ALEXANDRIA, VA 22314

EXAMINER

HOGAN, JAMES SEAN

ART UNIT	PAPER NUMBER
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3752

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/527,585

Applicant(s)

BOECKING, FRIEDRICH

Examiner

James S. Hogan

Art Unit

3752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/23/06+3/14/05.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent No. 2001-317433 to Kato et al.

Regarding claim 8, Kato et al discloses (See Figures 22-23) a fuel injection device (1) for an internal combustion engine, comprising a housing (2), at least one valve element (3) which cooperates with a valve seat (at 29) on an injection end of the housing (3) at least two circumferentially spaced fuel outlet conduits (7) in the housing associated with the valve element (3), and an annular groove (18) providing fluid communication between the fuel outlet conduits (7) associated with the valve element (36). As per claim 9, the groove is embodied in the housing (2). As per claim 10, Kato et al teaches grooves (23) in the valve element (4). As per claim 10, Kato et al teaches with grooves simultaneously in the valve element and housing (see Figure 24). As per claims 12-15, the grooves of Kato et al have approximately semi-circular cross-sections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3752

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. 2001-317433 to Kato et al in view of U.S. Patent 6,467,702 to Lambert et al.

The rejection of claims 8-10 above serves as the basis for the following. As per claims 16-18, Kato et al does not teach the grooves having an asymmetrical cross section. Lambert et al teaches asymmetrical grooves (14) in the valve member (see Figure 4) having less total curvature upstream of fuel outlets than downstream. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the any of the grooves of Kato et al with the asymmetrical grooves of Lambert

Claims 19-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. 2001-317433 to Kato et al in view of U.S. Patent 6,758,407 to Lambert et al.

The rejection of claims 8-10 above serves as the basis for the following. As per claims 19-27, Kato teaches grooved members and housing. Kato et al does not, per se, teach two axial valve elements. Lambert et al teaches (see Figure 2) a fuel injector having two co-axial valve elements (12,17) where each member has outlet conduits (15, 19) associated with it. The outlet conduit for the inner element (17) begins at a central blind hole (not numbered) formed on the injection end of the housing. It would have been obvious to one having ordinary skill in the art at the time the invention was made

to have modified the grooved member actuation of the fuel injector of Kato et al with the dual-member actuation of the fuel injector of Lambert et al in order to provide a synchronous fuel injection system based on fluctuation pressures and having staggered fuel sprays.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

U.S. Patent No. 6,220,528 to Cooke et al.

U.S. Patent No. 6,055,957 to Hasagawa et al

U.S. Patent No. 4,083,498 to Cavanagh et al

U.S. Patent No. 6,764,027 to Dantes et al

U.S. Patent No. 6,565,017 to Fath et al

U.S. Patent No. 4,758,169 to Steiger

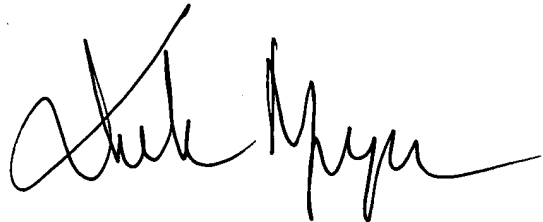
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Hogan whose telephone number is (571) 272-4902. The examiner can normally be reached on Mon-Fri, 7:00a-4:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin P. Shaver can be reached on (571) 272-4720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3752

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSH
2/15/2007

A handwritten signature in black ink, appearing to read 'Dinh Q. Nguyen', with a stylized, cursive script.

**DINH Q. NGUYEN
PRIMARY EXAMINER**